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# (12) United States Patent

### **Yamamoto**

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# (54) DRIVING DEVICE FOR DRIVING PIEZOELECTRIC ELEMENT

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(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

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This patent is subject to a terminal dis-

claimer.

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### Related U.S. Application Data

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### (30) Foreign Application Priority Data

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(52) **U.S. Cl.** 

CPC ...... *B41J 2/04541* (2013.01); *B41J 2/04536* (2013.01); *B41J 2/04581* (2013.01); *B41J 2/04588* (2013.01) ; *B41J 2/04588* (2013.01)

### (58) Field of Classification Search

CPC B41J 2/04536; B41J 2/04541; B41J 2/04581; B41J 2/04586; B41J 2/04588

See application file for complete search history.

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### (57) ABSTRACT

A liquid ejection device includes a head unit and a control unit. A driving signal generating portion of the control unit is configured to create a driving signal having at least one wave portion for ejecting the liquid from the nozzles. A signal converting portion of the control unit is configured to convert plural types of original control signals including an original latching signal and an original printing data signal into a single serial control signal having a serial form. A signal restoring portion of the head unit is configured to create plural types of restored control signals from the serial control signal received, the restored control signals including a restored latching signal and a restored printing data signal. The nozzles are configured and arranged to eject the liquid based on the driving signal, the restored latching signal, and the restored printing data signal.

### 8 Claims, 3 Drawing Sheets

